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An allied health industry journal



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A Solid Foundation *for* Future Success

**How Foundational Courses Serve as the
Building Blocks to a Successful Health
Science Educational Program**



These courses play a critical role in developing a foundation of knowledge in any health science field—and successful professional performance—but unfortunately, completing these courses can be a struggle for students.

If you've traveled to a foreign country and had the experience of being immersed in a different language, you know the disorienting feeling of not having the knowledge to navigate the new terrain. Street signs are meaningless, restrooms are elusive, and the most basic interaction can result in crossed signals.

Pursuing a career in healthcare can present students with a similar

sense of overwhelm. Even if a student studied biology or chemistry in high school, chances are good that stepping into medical terminology and anatomy and physiology coursework feels like exploring foreign territory. These students are literally learning a new language and exploring a new (human) landscape.

For students eager to embark on a career in healthcare, learning the native language of their chosen field is essential to charting the course for a successful professional journey. This includes learning medical terminology as well as acquiring core knowledge about the human





body through anatomy and physiology courses.

Just as a traveler versed in the native language can read the street signs, communicate with the locals, and interpret more nuanced interactions, students who have successfully completed these foundational courses have the tools to engage more effectively with future academic material and in their professional roles.

Tricia Berry, Ph.D., M.A.T.L., associate dean and director, Clinical and Practicum Programs at Purdue University Global, said, “Strong foundational courses give students knowledge, confidence, and a sense of their obligations as healthcare professionals. These courses start the student down the path of understanding and developing their professional identity.”

Developing foundational course material and delivery methods that engage students from a variety of backgrounds and connect them with the content in a meaningful way is more important than ever to maintain a pipeline of qualified, motivated healthcare professionals.

The aging population and ongoing impacts of the COVID-19 pandemic continue to accelerate demand for frontline healthcare

professionals. Employment in healthcare occupations continues to grow much faster than the average for all occupations, with about 2.4 million new jobs projected to be added to the field by 2029.¹

To meet the continually rising demand, health science educators are developing creative approaches to teaching foundational courses, striving to better support students and mitigate traditionally high attrition and course failure rates.

FOUNDATIONAL COURSES ARE THE BEDROCK

“Ensuring that healthcare students are successful in key foundational courses is crucial,” said Mary Gjernes, M.S., assistant professor, Division of Health and Natural Science, at Presentation College in Aberdeen, South Dakota.

“Preparing students with a firm knowledge of medical terminology and anatomy and physiology is vital to success in health science programs and in a career in the medical field,” she said. “Knowing and understanding word parts, the spelling and definition of words, and how each system of the human body works together are essential before a student moves on to upper-level science courses, such as pharmacology, immunology, epidemiology, biochemistry, physics, and many more.”

These courses are required subjects for the vast majority of healthcare degree and certificate programs, providing the universal language and knowledge underlying healthcare professions.

Berry notes this core knowledge is critical whether the student's goal is to obtain a clinical or an administrative role.

"If they have solid knowledge in medical terminology and anatomy and physiology, it helps them in all their other courses, because those two topics provide the foundation for clinical knowledge and procedures as well as billing and coding tasks."

Medical terminology, for example, is quite literally the language of medicine. Understanding and memorizing common prefixes, roots, and suffixes and combining vowel elements provides students the key to engage in more advanced coursework. Whether a student is studying to be a medical assistant or a medical coder, the ability to dissect and understand medical terminology is critical.

Anatomy and physiology is similarly essential. Understanding the structures and functions of the body is a first step toward a career focused on patients' health and well-being.

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DR. TRICIA BERRY, Ph.D., M.A.T.L., *associate dean and director, Clinical and Practicum Programs at Purdue University Global*

critical framework in the overall course of study," Gjernes said. "High-quality foundational courses develop an in-depth understanding of content, communication, and collaboration skills, expanding a learner's problem-solving and critical-thinking abilities."

Beyond the essential vocabulary and content these classes offer, this early coursework—which Gjernes notes is ideally delivered in a student's first two semesters of study—captures interest in health science and "enables students to dissect material and problem solve when enrolled in upper-level course study."

In addition, Berry said, "Students often use these foundational courses to develop good study habits. Much of the content requires a lot of pure memorization, so it provides great practice material for learning solid study habits."

As students complete healthcare degree or

certificate programs, achieve certifications, and move into professional roles, the principles and language of these foundational courses also play a significant role in their integration into care teams and healthcare organizations.

"The basic principles and expectations conveyed in introductory courses provide common reference points to guide coordinated collaboration among all healthcare professionals," Gjernes said, "thereby ultimately helping to accelerate inter-professional team-based care delivery. Foundational didactic knowledge allows students to excel in the application process and in their clinical performance."

BEYOND THE BARRIERS: ENGAGING STUDENTS IN FOUNDATIONAL COURSES FOR FUTURE SUCCESS

Although there's no question as to the critical role these courses play in developing a foundation of knowledge in the field—and successful professional

performance—completing these courses can be a struggle for students. In fact, introductory anatomy and physiology courses commonly have 30%-40% dropout and failure rates.²

The first barrier to success in these courses—the struggle with prerequisites—can actually occur before a student ever reaches the clinical portion of their program—a result of the common perception of the difficulty and discipline required for these foundational courses. In the case of anatomy and physiology, specifically, students

often encounter the material and are daunted by what they perceive as a colossal memorization task...a burden of expectation that can set them up for failure.³

Once immersed in a foundational course, students may be challenged by passive teaching methods that don't recognize the need to address individual learning styles. In this scenario, a student who is a visual learner may be able to stay on top of memorization or reading, but an auditory (learns by listening) or kinesthetic (learns by doing) learner could fall behind if they don't engage with the material. And, in many cases, students begin foundational courses with little to no preparation in basic science or math courses—or with the study skills required to dive into the material.⁴

These challenges to successful completion of foundational courses are reflected in high rates of attrition and failure to meet the required grade to pass anatomy and physiology at institutions across the country.⁵ Given these courses are generally prerequisites for the remaining courses in a degree or certificate program, students who are not able to complete the courses find their professional goals delayed or derailed, and the pipeline of qualified allied healthcare workers suffers.⁶

INNOVATE TO ACTIVATE LEARNING

Given the challenge of retaining students and helping them achieve academic success, educators continue to seek new approaches to engage students in foundational classes—in person and online. In both modes of delivery, an “active learning” approach can help students absorb and retain the information.⁷ Active learning immerses students in the subject through discussion, reflection, collaboration, and problem-solving activities.

“Daily classroom activities must be varied to engage students with different learning styles,” Berry said. “There will always be some reading and memorization, but auditory, visual, tactile, and kinesthetic activities help students engage with and solidify their understanding of the content.”

Active learning strategies are increasingly being applied to anatomy and physiology courses to improve student engagement and interaction—with positive results.⁸ Educators are sharing creative ideas as innovation increases in this area. Examples include writing poetry to help with memorization, creating guided drawing exercises to aid anatomy and physiology students, and integrating



small-group discussions and projects within larger lecture classes.⁹

Although the specific tactics and tools to deliver material in this way varies across in-person and virtual classes, Gjernes and Berry note a variety of tactics that have proven successful in their experiences. Here are some of them:

- **Aim for Dialogue, Not Monologue**—“Developing dialogue with students in a tone and demeanor that encourages increased participation engages them and helps them retain the information being discussed,” Gjernes said. “We need to talk *with* students, not *at* them, which creates a sense of ownership of their learning.”

- **Develop Meaningful Connections**—“Students need to feel safe and experience success if they are going to keep moving forward,” Berry notes. “Meaningful connections between the faculty and student during foundational courses can set the entire tone for the remainder of the student’s education. The foundation of most allied health professions is being able to build relationships with others, so in doing this, faculty are modeling the skills a student will need within their career.”

- **Make it Personal**—“Over time, engaging students with personal interaction and meaningful and relevant facts is very effective,” Gjernes said.

This can mean engaging students in conversation around how they feel about a topic, asking if they have personal experiences related to the material, or connecting the topic with current, real-world examples.

“This personal interaction fosters connection and develops enthusiasm for the subject,” Gjernes notes.

- **Focus in on Fun**—“Making learning fun is of utmost importance for engagement in foundational courses,” Gjernes said. “This could include creating a game around a lesson plan or storytelling related to the course material, both of which can be effective in helping students learn and retain information.”

Additionally, offering online, interactive elements can break up the monotony.

- **Recognize Unique Learning Styles**—“Identifying different learning styles allows students to recognize their strengths and weaknesses in learning, allowing them to become more engaged as learning is easier for them.”

Across efforts to engage and help students retain this vital knowledge, Berry said, the goal is to, “manage the classroom in a way that allows students to develop their study habits and insight into how they personally learn best.”

When these goals are realized she said, “these courses can really position students for success and help them understand what to anticipate for the rest of the program, and, in turn, their career.”

CONCLUSION

The language and knowledge of foundational coursework is essential and will serve students throughout their professional careers. There is a clear and present need to ensure students are engaging with and retaining the material in these courses, because it forms the bedrock of their academic and professional success.

“Effective strategies for student success in the healthcare professions initiate from foundational course learning,” Gjernes said.

“From my view, as an advisor and a professor in Health and Natural Sciences, it is apparent that successfully learning this material in foundational courses is critical to keeping students engaged and focused on their professional trajectory.”